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sues into three systems is maintained against the much more satisfactory stelar classification of Van Tieghem. In morphology the root, stem, leaf and trichome are still recognized as equivalent members, in spite of the clearer presentation possible when root and shoot are regarded as primary members.

On the whole we must conclude that Prantl's book needed a thorough rewriting to modernize it and to make it a fit presentation of the botanical science of the close of the century. It has, of course, an immense amount of material that is good enough to commend it to many teachers who prefer to 'inquire after the old paths and walk therein.' But to this extent it contributes to stagnation instead of to progress.

CHARLES R. BARNES.

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*SCIENTIFIC JOURNALS.*

AMERICAN CHEMICAL JOURNAL, NOVEMBER.

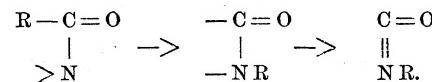
*Diffusion of Sulphides through Steel:* By E. D. CAMPBELL. These experiments lead to some very interesting results. The method used was to drill holes in the steel bars, fill the holes with sulphide and, after filling the opening with a steel plug, heat the bars in a furnace. It was found that neither ferrous oxide nor a sub-oxide would diffuse through the bars; but that oxysulphides would diffuse throughout the bar and the sulphur become oxidized at the surface. Cuprous sulphide when mixed with iron-oxy-sulphide was found to diffuse in an unchanged state. Evidently the substances pass through the pores of the steel in a liquid and not a gaseous form, and are influenced by gravity as they accumulate at the lowest part of the bars.

*Effect of Heat Treatment and Carbon upon the Solubility of Phosphorus in Steel:* By E. D. CAMPBELL and S. C. BABCOCK. The soluble and insoluble phosphorus was determined by treating the iron with mercuric chloride solution, when it was found that part of the phosphorus was soluble in this reagent and part not. If the amount of carbon is small the effect of heat treatment upon the solubility of phosphorus is slight; but if the amount of carbon is increased, the solubility of the phosphorus is diminished. It is probable that at high tem-

peratures a difficultly soluble compound of iron with carbon and phosphorus is formed, which by slow cooling is converted into an easily soluble one.

*Malonic Nitrile and some of its derivatives:* By B. C. HESSE. The object of this investigation was to ascertain, if possible, whether in the salts of malonic nitrile, the metal is bound to nitrogen or carbon. The bromine and silver salts were prepared and studied. When the silver salts are treated with alkyl iodides, dialkyl malonic nitriles and alkyl isocyanides are formed. These facts can best be explained on the assumption that the metal is in combination with nitrogen. The action of chlorformic esters and of alkyl iodides on an alcoholic solution of malonic nitrile and sodium alcoholate was also studied. It is probable that a sodium malonic nitrile is formed, which is then acted on by the alkyl iodides. The final product of the reaction is a monimido ether, whose formation can be explained in several ways.

*On the 'Beckmann Rearrangement':* By J. STIEGLITZ. Acid bromamides when treated with a methyl alcohol solution of sodium methylate undergo a rearrangement and give urethanes and other derivatives of the isocyanates. This rearrangement is only effected by alkaline solutions. He considers it possible that this is due to the loss of hydrobromic acid and the formation of a body  $(RCO)N <$ , which would cause the separation of the alkyl R from the carbon atom holding the nitrogen.



Other facts point to the same conclusion and investigations are being carried out on other classes of compounds to see whether any similar rearrangements take place.

*Menthene Nitrosochloride and some of its derivatives:* By W. O. RICHTMANN and EDWARD KREMERS. The statements as to the melting-point of this compound are so conflicting that this investigation was undertaken to settle, if possible, this question. It was found that at least two, and possibly three, nitrosochlorides exist. A ketone was also obtained by the action of hydrochloric acid on nitrosomethane

and some derivatives obtained from it. A number of substances were obtained whose exact natures have not yet been determined.

*Tetrametaphosphimic Acid:* By H. N. STOKES. In this article, which is a continuation of one recently published on the phosphimic acids, the author discusses the acid, its decompositions, and the salts formed by it. He also offers some suggestions as to its structure, but calls attention to the fact that experimental data for such a discussion is almost wholly wanting.

A short obituary notice of August Kekulé, who died July 13, 1896, is also contained in this number.

J. ELLIOTT GILPIN.

#### SOCIETIES AND ACADEMIES.

##### THE AMERICAN CHEMICAL SOCIETY.

THE regular meeting of the American Chemical Society was held at the College of the City of New York on Friday evening, November 6th, Prof. William McMurtrie in the chair, and fifty-one members present.

The announcement was made that an invitation from Drs. Morton and Leeds to hold the next meeting (December 11th) at the Stevens Institute of Technology, Hoboken, had been received, duly acted upon and accepted by the Executive Committee. Dr. Morton will read a paper on 'Some Illustrations of the Phenomena of Fluorescence,' and Dr. Leeds will give an 'Exhibition of Appliances for the Quantitative Estimation of Micro-Organisms.'

Dr. Squibb reviewed in detail the method of Messrs. Robineau and Bollin for the 'Volumetric Determination of Aceton.' (*Moniteur Scientifique*, 1893.) This method consists in mixing acetone with a solution of potassium iodide and sodium hydroxide, and then transforming it into iodoform with a titrated solution of a hypochlorite. The end reaction is indicated by the appearance of a blue color when a drop of the liquid is touched with a drop of bicarbonated starch solution. From the volume of hypochlorite used the quantity of acetone is deduced. Dr. Squibb has introduced various modifications which shorten the work so as to render the process available in commercial work, the details of which require a perusal of the paper in full for their due appreciation.

Dr. Doremus gave an interesting sketch of the scientific meetings held in London and Paris last summer, and of the various English and Continental laboratories visited, not the least efficient of which were several connected with large manufacturing establishments. The expensive platinum apparatus used by Moissan in the isolation of fluorine, Dewars's apparatus for liquefaction of oxygen, and photographs of the spectrum of Argon, were among many extremely interesting landmarks in the progress of chemical science which were seen and described.

Mr. J. C. Boot exhibited and described a specific gravity bottle, designed to prevent the rapid alteration of the temperature of the liquid and consequent difficulty in making accurate weighings, when the temperature of the laboratory happens to be much above the standard temperature at which the liquid must be weighed. The essential point is the inclosure of an inner by an outer bottle, the space between being quite thoroughly exhausted. The non-conductivity of the vacuum permits of maintaining the temperature of the inner bottle stationary for as much as five minutes with a room difference of twenty-five or thirty degrees.

A paper by Mr. Heath, on the colorimetric determination of copper, described methods of preparing color standards, whereby a year's permanence is assured, and other modifications conducive of accuracy and rapidity. Mr. Heath insists on the absence of nitric acid in the standards of color comparison, as well as an excess of ammonia of uniform strength, and the standards should then be preserved in absolutely tight, glass-stoppered bottles, and not exposed to heat or direct sunlight.

He objects to the method involving the use of metallic aluminum, because of the danger of incomplete precipitation, or retention of copper by silica, and the additional time required to avoid or correct errors resulting in these ways. He advocates a double precipitation, by ammonia, of the iron and alumina, redissolving in sulphuric acid for the second precipitation. His standards enable him to read to 0.03 per cent., and check assays made by electrolytic method indicate a very small range of error.

DURAND WOODMAN,  
*Secretary.*